

THREDDS Catalogs contain information that is related to THREDDS Data Server (TDS) behavior, dataset grouping, and to dataset description. Most of the information that can be included in the catalogs overlaps with various ISO metadata standards. This overlap is explored on three levels: datasets, catalog structure, and service definitions.

Contents

- 1 THREDDS Datasets and ISO MI Metadata
 - ◆ 1.1 Metadata group
 - ◇ 1.1.1 Geospatial Coverage
 - ◇ 1.1.2 Where Does the Metadata Group Go?
 - ◆ 1.2 Documentation Elements
- 2 THREDDS Catalog Structure

THREDDS Datasets and ISO MI_Metadata

The most straightforward connection between THREDDS and ISO metadata exists at the dataset = MI_Metadata level because describing datasets is the primary goal of ISO 19115(-2) metadata.

Metadata group

THREDDS metadataGroup Element	ISO Xpath
metadata	ISO definitely needs a way to link to more complete versions of metadata.
property	This very general tag could contain a variety of ISO-compliant content.
contributor	/gmi:MI_Metadata/gmd:identificationInfo/gmd:MD_DataIdentification/gmd:credit
creator	/gmi:MI_Metadata/gmd:identificationInfo/gmd:MD_DataIdentification/gmd:citation/gmd:CI_Citation/role=originator
date	/gmi:MI_Metadata/gmd:identificationInfo/gmd:MD_DataIdentification/gmd:citation/gmd:CI_Citation/date
project	/gmi:MI_Metadata/gmd:identificationInfo/gmd:MD_DataIdentification/gmd:aggregationInfo/gmd:MD_AggregationInfo/gmd:MD_Identifier
publisher	/gmi:MI_Metadata/gmd:identificationInfo/gmd:MD_DataIdentification/gmd:citation/gmd:CI_Citation/role=publisher
geospatialCoverage	see notes below
timeCoverage	see notes below
variables	/gmi:MI_Metadata/gmd:contentInfo/gmi:MI_CoverageDescription/gmd:dimension/gmd:MD_Band
dataType	
dataFormat	/gmi:MI_Metadata/gmd:identificationInfo/gmd:MD_DataIdentification/gmd:resourceFormat/gmd:MD_Format
serviceName	
authority	
dataSize	

Geospatial Coverage

The THREDDS approach to describing geospatial coverage is unique among metadata standards. Rather than describing the minimum and maximum values of the axes, the starting point, the size (in the units of the axes), and the resolution are specified. Thus, a global 1 degree grid would be specified as:

```
<geospatialCoverage>
  <northsouth>
    <start>-90</start>
    <size>180</size>
    <resolution>1.0</resolution>
    <units>degrees_north</units>
  </northsouth>
  <eastwest>
    <start>-180.00</start>
    <size>360</size>
    <resolution>1.0</resolution>
    <units>degrees_east</units>
  </eastwest>
</geospatialCoverage>
```

Where Does the Metadata Group Go?

The [THREDDS Catalog Specification](#) describes two types of datasets. A dataset is *direct* if it contains at least one access path, otherwise it is just a container for nested datasets, called a *collection* dataset. The XML representation of these two type looks (schematically) like:

```
<catalog>
  <dataset>
    <metadata inherited=?true?></metadata>      <!-- Collection Dataset -->
    <dataset urlPath=?accessPath?>           <!-- Collection Metadata-->
      <metadata></metadata>                   <!-- Direct Dataset -->
    </dataset>                                 <!-- Direct Metadata -->
  </dataset>
</catalog>
```

Both types of datasets can include metadata which is termed Collection and Direct Metadata respectively. Note that Collection Metadata almost universally includes the `inherited = "true"` attribute which means that those metadata pertain to the entire collection.

A parallel concept exists in the ISO 19115-2 metadata standard. Both types of ISO metadata are described using the MI_Metadata object (MD_Metadata in ISO 19115). A collection dataset is termed a *DS_Series* and it is described by *seriesMetadata*. A direct dataset is included in a *DS_DataSet* (note that, in ISO, the collection metadata comes after the direct metadata):

```
<gmd:DS_Series>
  <gmd:composedOf/>
  <gmd:seriesMetadata/>                       <!-- Collection Metadata -->
  <gmd:subset>
    <gmd:DS_Series>
      <gmd:composedOf>
        <gmd:DS_DataSet>
          <gmd:has>
            <gmi:MI_Metadata></gmi:MI_Metadata> <!-- Direct Metadata -->
          </gmd:has>
          <gmd:has>
            <gmi:MI_Metadata></gmi:MI_Metadata> <!-- Direct Metadata -->
          </gmd:has>
        </gmd:DS_DataSet>
      </gmd:composedOf>
    </gmd:DS_Series>
  </gmd:subset>
</gmd:DS_Series>
```

THREDDS_and_ISO_Metadata

```
</gmd:composedOf>
<gmd:seriesMetadata>
  <gmi:MI_Metadata></gmi:MI_Metadata>      <!-- Collection Metadata -->
</gmd:seriesMetadata>
</gmd:DS_Series>
</gmd:subset>
</DS_Series>
```

The [THREDDS Specification](#) states that "The elements in the `threddsMetadataGroup` [described above] may be used as elements nested in either dataset or metadata elements. This means that, *within a single dataset*, two structures are valid:

```
<dataset name="NCEP-DGEX-CONUS_12km" collectionType="ForecastModelRuns"
  harvest="true" ID="fmrc/NCEP/DGEX/CONUS_12km">
  <metadata inherited="true">
    <serviceName>fmrcServices</serviceName>
    <authority>edu.ucar.unidata</authority>
    <dataType>GRID</dataType>
    <dataFormat>GRIB-2</dataFormat>
    <documentation type="summary">The NCEP DGEX Model is the Eta model extended to 8 days
      over smaller domains using the
      operational Eta model 78 hour forecast and GFS boundary conditions.</documentation>
    <creator>
      <name vocabulary="DIF">DOC/NOAA/NWS/NCEP</name>
      <contact url="http://www.ncep.noaa.gov/" email="http://www.ncep.noaa.gov/mail_liaison.shtml">
    </creator>
  </metadata>
</dataset>
```

or

```
<dataset name="NCEP-DGEX-CONUS_12km" collectionType="ForecastModelRuns"
  harvest="true" ID="fmrc/NCEP/DGEX/CONUS_12km">
  <metadata inherited="true"/>
  <serviceName>fmrcServices</serviceName>
  <authority>edu.ucar.unidata</authority>
  <dataType>GRID</dataType>
  <dataFormat>GRIB-2</dataFormat>
  <documentation type="summary">The NCEP DGEX Model is the Eta model extended to 8 days
    over smaller domains using the
    operational Eta model 78 hour forecast and GFS boundary conditions.</documentation>
  <creator>
    <name vocabulary="DIF">DOC/NOAA/NWS/NCEP</name>
    <contact url="http://www.ncep.noaa.gov/" email="http://www.ncep.noaa.gov/mail_liaison.shtml"/>
  </creator>
</dataset>
```

The available metadata is the same in both of these cases so the specifics of the arrangement of the information might not be important. However, the THREDDS metadata tag serves several purposes: "A metadata element contains any number of elements from the `threddsMetadataGroup` in any order, OR it contains any other well-formed XML elements, as long as they are in a namespace other than the THREDDS namespace. *It may also contain an XLink to another XML document*, whose top-level element should be a valid metadata element."

The third case, where the metadata tag points to more complete metadata using an xlink, is critical if more complete metadata exists for this dataset in a web accessible repository. Given that the THREDDS metadata is designed to support discovery, more complete metadata could be available in many cases. In those cases, the content of the metadata tag is supplied through the xlink, so the tag can not contain other content. The second approach shown above enables the third use of the metadata tag, so it may be preferable. Examples of

THREDDS_and_ISO_Metadata

this approach are available in the THREDDS Links at the [NGDC Metadata Folder](#).

Documentation Elements

The THREDDS documentation element holds human-readable character strings with one of the following types: funding, history, processing_level, rights, or summary. These elements map to the following ISO elements:

THREDDS documentationType	ISO Xpath
funding	/gmi:MI_Metadata/gmd:identificationInfo/gmd:MD_DataIdentification/gmd:credit
history	/gmi:MI_Metadata/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:lineage/gmd:LI_Lineage/gmd
processing_level	
rights	/gmi:MI_Metadata/gmd:identificationInfo/gmd:MD_DataIdentification/gmd:resourceConstraints/g
summary	

THREDDS Catalog Structure

THREDDS Catalogs are designed to have all of the hierarchical capabilities of file directories that they emulate.